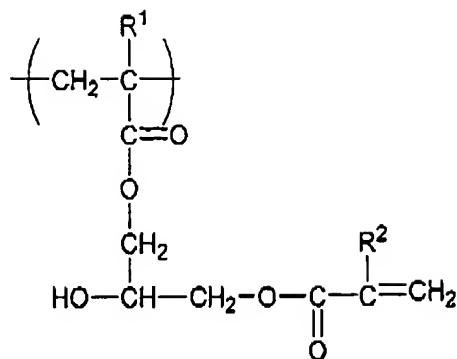


CLAIMS

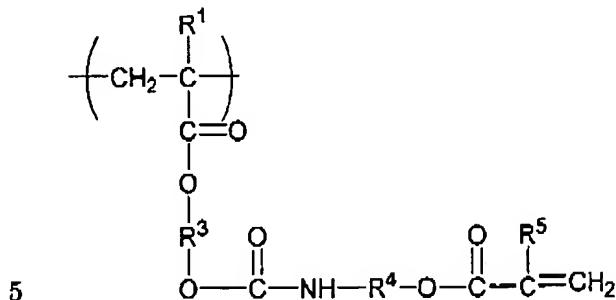
1. A curable resin composition comprising:
 - 5 a copolymer (a) having a molecular structure in which a constitutional unit including an acidic functional group and a constitutional unit including a photocurable functional group are linked at least;
 - 10 a photopolymerization initiator (b) having a tertiary amine structure; and
 - 15 a photocurable compound (c) having at least one acidic functional group and at least three photocurable functional groups.
2. The curable resin composition according to claim 1, wherein the constitutional unit having the photocurable functional group of the copolymer (a) includes an ethylenically unsaturated bond as the photocurable functional group.
3. The curable resin composition according to claim 1 or 2, wherein the copolymer (a) includes a constitutional unit represented by a following formula (1) and/or a constitutional unit represented by a following formula (2), as the constitutional unit having the photocurable unit:

Formula (1)



wherein R1 is a hydrogen or an alkyl group having 1 to 5 carbon atoms, and R2 is a hydrogen or a methyl group;

Formula (2)



wherein R1 is the same as defined above, R3 is an alkylene group having 2 to 4 carbon atoms, R4 is an alkylene group, and R5 is a hydrogen or a methyl group.

10 4. The curable resin composition according to any one of claims 1 to 3, wherein the copolymer (a) has a molecular weight of 3,000 to 1,000,000.

15 5. The curable resin composition according to any one of claims 1 to 4, further comprising a photocurable compound (d) having at least two photocurable functional groups with the proviso that the photocurable compound (d) is other than the photocurable compound

(c).

6. The curable resin composition according to claim 5, wherein a weight ratio $((a) / ((c) + (d)))$ of the copolymer (a) to a total of the 5 photocurable compound (c) and the photocurable compound (d) is up to 1.5, on the basis of solid content.

7. The curable resin composition according to any one of claims 1 to 6, wherein the photopolymerization initiator (b) having the 10 tertiary amine structure is contained at least 10 % by weight, on the basis of solid content.

8. The curable resin composition according to any one of claims 1 to 7, wherein the curable resin composition is used for fabricating 15 a liquid crystal panel substrate.

9. A liquid crystal panel substrate comprising:
a transparent substrate; and
a color layer disposed on the transparent substrate,
20 the liquid crystal panel substrate optionally comprising:
a protective film for covering the color layer; and/or
a spacer disposed in a non-display region on the substrate,
characterized in that
at least one of the protective film and the spacer is formed by
25 curing the curable resin composition according to any one of claims 1 to 7.

10. A liquid crystal panel comprising:

 a display side substrate;

 a liquid crystal driving side substrate opposite to the display

5 side substrate; and

 a liquid crystal filled and sealed between these two substrates,

characterized in that

 at least one of the display side substrate and the liquid

10 crystal driving side substrate is the liquid crystal panel substrate

 according to claim 9.

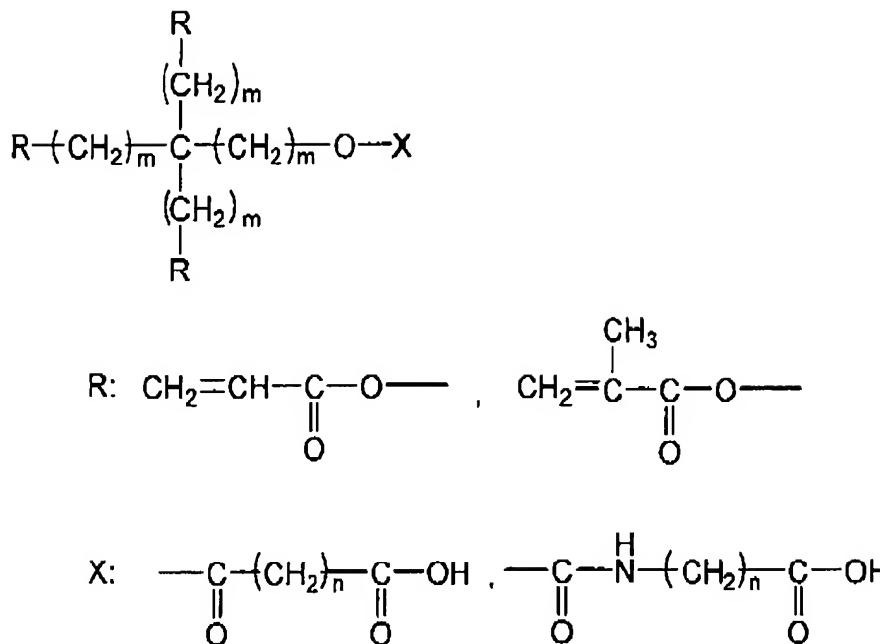
11. The curable resin composition according to claim 1,

characterized in that the photocurable compound (c) is an acidic

15 group-containing monomer (c3) represented by a following formula

 (11):

Formula (11)



wherein each of m and n is an integer equal to 1 or more than 1, independently.

5 12. The curable resin composition according to claim 11, capable of forming a convex pattern having a lower area S1 and an upper area S2 satisfying a relationship $S2 \leq S1$, in processes including: forming a coating film and subjecting the coating film sequentially to a selective exposure and an alkali developing treatment.

10

13. The curable resin composition according to claim 11 or 12, further comprising a photocurable compound (d) having at least two photocurable functional groups with the proviso that the photocurable compound (d) is other than the photocurable compound (c).

15

14. The curable resin composition according to any one of claims

11 to 13, further comprising at least one kind of colorant (e), wherein a weight ratio ((e) / (c3)) of the acidic group-containing monomer (c3) to the colorant (e) satisfies a relationship $0.3 < (e) / (c3) < 0.6$.

5

15. A color filter comprising:

a transparent substrate; and

a color layer disposed on the transparent substrate,

the color filter optionally comprising:

10 a protective film for covering the color layer; and/or

a spacer disposed in a non-display region on the transparent substrate, wherein

at least one of the color layer, the protective film and the spacer is formed by curing the photosensitive composition according

15 to any one of claims 11 to 14.

16. A liquid crystal panel substrate having a plurality of spacers disposed in a non-display region on a substrate, wherein the spacers are formed by curing the photosensitive composition according to

20 any one of claims 11 to 14.

17. A liquid crystal panel comprising:

a display side substrate;

a liquid crystal driving side substrate opposite to the display

25 side substrate; and

a liquid crystal filled and sealed between these two

substrates, wherein

the display side substrate is the color filter according to
claim 15.

5 18. A liquid crystal panel comprising:

a display side substrate;
a liquid crystal driving side substrate opposite to the display
side substrate; and

10 a liquid crystal filled and sealed between these two
substrates, wherein

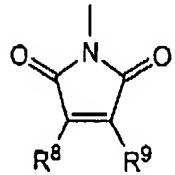
the liquid crystal driving side substrate is the liquid crystal
panel substrate according to claim 16.

19. The curable resin composition according to claim 1, for a use
15 of forming a photosensitive pattern, characterized in that

the copolymer (a) is an imide group-containing copolymer (a1)
containing a constitutional unit including a cyclic imide group
represented by a following formula (19), as the constitutional unit
including the photocurable functional group, and

20 the copolymer (a) is used for forming the photosensitive
pattern:

Formula (19)



wherein each of R8 and R9 is an alkyl group having 4 or less carbon

atoms independently, or one of R8 and R9 is a hydrogen atom and the other is an alkyl group having 4 or less carbon atoms, or both R8 and R9 together form a carbon ring.

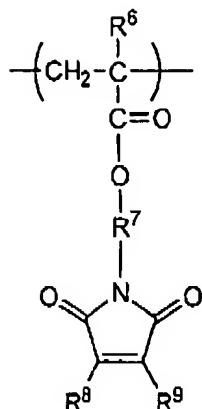
5 20. The curable resin composition for a use of forming a photosensitive pattern according to claim 19, wherein the imide group-containing copolymer (a1) further contains a constitutional unit including another photocurable functional group other than the cyclic imide group.

10

21. The curable resin composition for a use of forming a photosensitive pattern according to claim 19 or 20, wherein the constitutional unit of the imide group-containing copolymer (a1) contains an ethylenically unsaturated bond as a photocurable 15 functional group other than the cyclic imide group.

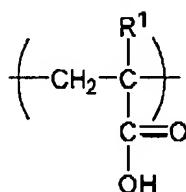
22. The curable resin composition for a use of forming a photosensitive pattern according to any one of claims 19 to 21, wherein the imide group-containing copolymer (a1) contains a 20 constitutional unit represented by a following formula (21) as the constitutional unit including the cyclic imide group and a constitutional unit represented by a following formula (3) as the constitutional unit including the acidic functional group:

Formula (21)



wherein R6 is a hydrogen or an alkyl group having 1 to 5 carbon atoms, R7 is an alkylene having 1 to 6 carbon atoms, R8 and R9 are the same as defined above,

5 Formula (3)



wherein R1 is a hydrogen or an alkyl group having 1 to 5 carbon atoms.

10 23. The curable resin composition for a use of forming a photosensitive pattern according to any one of claims 19 to 22, wherein the imide group-containing copolymer (a1) contains an alcoholic hydroxy group in its molecule.

15 24. The curable resin composition for a use of forming a photosensitive pattern according to any one of claims 19 to 23, characterized in that an elastic deformation modulus [(elastic deformation amount / total deformation amount) × 100] against a compressive load of 2.0 GPa exhibits at least 60 % at a room

temperature after curing.

25. The curable resin composition for a use of forming a photosensitive pattern according to any one of claims 19 to 24,
5 further comprising: a photocurable compound (d) having at least two photocurable functional groups with the proviso that the photocurable compound (d) is other than the photocurable compound (c).

10 26. The curable resin composition for a use of forming a photosensitive pattern according to claim 25, characterized in that the photocurable compound (d) (other than the compound (c)) contains at least three ethylenically unsaturated bonds as the photocurable functional group, and contains an alcoholic hydroxy
15 group.

27. The curable resin composition for a use of forming a photosensitive pattern according to any one of claims 19 to 26, wherein a solid content weight ratio $((a1) / (c))$ of the photocurable 20 compound (c) to the imide group-containing copolymer (a1) in a case that the curable resin composition includes no photocurable compound (d) with the proviso that the photocurable compound (d) is other than the photocurable compound (c), or a solid content weight ratio $((a1) / \{(c) + (d)\})$ of a total of the photocurable 25 compound (c) and the photocurable compound (d) to the imide group-containing copolymer (a1) in a case that the curable resin

composition includes the photocurable compound (d), is 0.7 or less.

28. The curable resin composition for a use of forming a photosensitive pattern according to any one of claims 19 to 27,
5 wherein the photopolymerization initiator (b) having the tertiary
amine structure is contained at 0.05 to 5 % by weight, on the basis
of solid content.

29. The curable resin composition for a use of forming a
10 photosensitive pattern according to any one of claims 19 to 28,
wherein the curable resin composition is used for fabricating a
liquid crystal panel substrate.

30. A liquid crystal panel substrate comprising:
15 a transparent substrate; and
a color layer disposed on the transparent substrate,
the liquid crystal panel substrate further comprising:
a protective film for covering the color layer; and/or
a spacer disposed in a non-display region on the substrate,
20 characterized in that
at least one of the protective film and the spacer is formed by
curing the curable resin composition according to any one of claims
19 to 29.

25 31. The liquid crystal panel substrate according to claim 30,
wherein the spacer has at least 60 % of an elastic deformation

modulus [(elastic deformation amount / total deformation amount) $\times 100$] against a compressive load of 2.0 GPa at a room temperature.

32. A liquid crystal panel comprising:

5 a display side substrate;

a liquid crystal driving side substrate opposite to the display side substrate; and

a liquid crystal filled and sealed between these two substrates, characterized in that

10 at least one of the display side substrate and the liquid crystal driving side substrate is the liquid crystal panel substrate according to claim 30 or 31.

33. The curable resin composition according to claim 1,
15 characterized in that the composition further comprises a colorant (e) and is used for forming a colorant pattern.

34. The curable resin composition for forming the colorant pattern according to claim 33, further comprising a photocurable 20 compound (d) (other than the compound (c)) having at least two photocurable functional groups.

35. The curable resin composition for forming the colorant pattern according to claim 33 or 34, containing the photocurable 25 compound (c) of 3 to 30 % by weight, on the basis of solid content.

36. The curable resin composition for forming the colorant pattern according to any one of claims 33 to 35, wherein the photopolymerization initiator (b) having the tertiary amine structure is contained at least 5 % by weight, on the basis of solid content.

37. The curable resin composition for forming the colorant pattern according to any one of claims 33 to 36, wherein the copolymer (a) has a molecular weight of 3,000 to 1,000,000.

10

38. The curable resin composition for forming the colorant pattern according to any one of claims 33 to 37, wherein the curable resin composition is used for forming a colorant pattern for a color filter.

15

39. A color filter comprising:

a transparent substrate; and

a pixel disposed on the transparent substrate,

the color filter optionally comprising:

20 a black matrix layer,

characterized in that

the pixel and/or the black matrix layer are formed by curing the curable resin composition according to any one of claims 33 to 38.

25

40. A liquid crystal panel comprising:

a display side substrate;

a liquid crystal driving side substrate opposite to the display side substrate; and

a liquid crystal filled and sealed between these two
5 substrates, characterized in that

the display side substrate is the color filter according to
claim 39.